

U.S. Department of Commerce, Patent and Trademark INFORMATION DISCLOSURE STATEMENT BY APPLICANT MAR 05 2004 PATENT & TRADEMARK OFFICE Use several sheets if necessary)		Atty. Docket No.	Application No.
		TNCR.196US2	10/699,153
		Applicant(s)	Conf. No.
		Ibrahim Abdulhalim, et al.	1463
		Filing Date	Group
		October 30, 2003	1765

U.S. Patent Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
/LGL/	1	4,103,998	Aug. 1, 1978	Nakazawa et al.			
	2	4,167,337	Sep. 11, 1979	Jaerisch et al.			
	3	4,631,416	Dec. 23, 1986	Trutna, Jr.			
	4	4,750,836	Jun. 14, 1988	Stein			
	5	4,818,110	Apr. 4, 1989	Davidson			
	6	4,820,055	Apr. 11, 1989	Muller			
	7	4,828,392	May 9, 1989	Nomura et al.			
	8	4,848,911	Jul. 18, 1989	Uchida et al.			
	9	4,929,083	May 29, 1990	Brunner			
	10	4,999,014	Mar. 12, 1991	Gold et al.			
	11	5,112,129	May 12, 1992	Davidson et al.			
	12	5,114,235	May 19, 1992	Suda et al.			
	13	5,166,752	Nov. 24, 1992	Spanier et al.			
	14	5,172,190	Dec. 15, 1992	Kaiser			
	15	5,182,455	Jan. 26, 1993	Muraki			
	16	5,182,610	Jan. 26, 1993	Shibata			
	17	5,189,494	Feb. 23, 1993	Muraki			
	18	5,316,984	May 31, 1994	Leroux			
	19	5,327,221	Jul. 5, 1994	Saithoh et al.			
	20	5,340,992	Aug. 24, 1994	Matsugu et al.			
	21	5,343,292	Aug. 30, 1994	Brueck et al.			
	22	5,414,514	May 9, 1995	Smith et al.			
	23	5,465,148	Nov. 7, 1995	Matsumoto et al.			
	24	5,525,840	Jun. 11, 1996	Tomnaga			
	25	5,596,406	Jan. 21, 1997	Rosencwaig et al.			
	26	5,596,413	Jan. 21, 1997	Stanton et al.			
	27	5,608,526	Mar. 4, 1997	Piwonka-Corle et al.			
	28	5,666,196	Sep. 9, 1997	Ishii et al.			
	29	5,739,909	Apr. 14, 1998	Blayo et al.			
/LGL/	30	5,801,390	Sep. 1, 1998	Shiraishi			

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(Use several sheets if necessary)				Ibrahim Abdulhalim, et al.		1463	
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U.S. Patent Documents (con.)							
/LGL/	31	5,883,710	Mar. 16, 1999	Nikoonahad et al.			
	32	5,889,593	Mar. 30, 1999	Bareket			
	33	5,909,333	Jun. 1, 1999	Best et al.			
	34	5,910,841	Jun. 8, 1999	Masao			
	35	5,912,983	Jun. 15, 1999	Hiratsuka			
	36	5,923,041	Jul. 13, 1999	Cresswell et al.			
	37	6,013,355	Jan. 11, 2000	Chen et al.			
	38	6,046,094	Apr. 4, 2000	Jost et al.			
	39	6,077,756	Jun 20, 2000	Lin et al.			
	40	6,079,256	Jun. 27, 2000	Bareket			
	41	6,081,325	Jun. 27, 2000	Leslie et al.			
	42	6,128,089	Oct. 3, 2000	Ausschnitt et al.			
	43	6,134,011	Oct. 17, 2000	Klein et al.			
	44	6,153,886	Nov. 28, 2000	Hagiwara et al.			
	45	6,160,622	Dec. 12, 2000	Dirksen et al.			
	46	6,165,656	Dec. 26, 2000	Tomimatu			
	47	6,177,330	Jan. 23, 2001	Yasuda			
	48	6,197,679	Mar. 6, 2001	Hattori			
	49	6,255,189	Jul. 3, 2001	Muller et al.			
	50	6,301,001	Oct. 9, 2001	Unno			
	51	6,323,560	Nov. 27, 2001	Narimatsu et al.			
	52	6,342,735	Jan. 29, 2002	Colelli et al.			
	53	6,420,791	Jul. 17, 2002	Huang et al.			
	54	6,420,971	Jul. 16, 2002	Leck et al.			
	55	6,421,124	Jul. 16, 2002	Matsumoto et al.			
	56	6,462,818	Oct. 8, 2002	Bareket			
	57	6,476,920	Nov. 5, 2002	Scheiner et al.			
	58	6,486,954	Nov. 26, 2002	Mieher et al.			
	59	6,522,406	Feb. 18, 2003	Rovira et al.			
	60	6,590,656	Jul. 8, 2000	Xu et al.			
	61	6,611,330	Aug. 26, 2003	Lee et al.			
/LGL/	62	6,633,831	Oct. 14, 2003	Nikoonahad et al.			

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U.S. Published Patent Application Documents							
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
/LGL/	63	2002/00072001	Jun. 13, 2002	Brown et al.			
/LGL/	64	2003/0002043	Jan. 2, 2003	Abdulhalim et al.			
/LGL/	65	2003/0020184	Jan. 30, 2003	Ballarin			
Foreign Patent Documents							
							Translation
		Document	Date	Country	Class	Subclass	Yes No
/LGL/	66	WO03042629	May 22, 2003	WIPO			
	67	WO02/050509	Jun. 27, 2002	WIPO			
	68	WO99/45340	Sep. 10, 1999	WIPO			
	69	WO03001297	Jan. 3, 2003	WIPO			
	70	WO0184382	Nov. 8, 2001	WIPO			
	71	WO0218871	Mar. 7, 2002	WIPO			
	72	WO03054475	Jul. 3, 2003	WIPO			
	73	WO95/02200	Jan. 19, 1995	WIPO			
	74	WO 99/56174	Nov. 4, 1999	WIPO			
	75	WO85/04266	Sep. 26, 1985	WIPO			
	76	JP60126881	Jul. 6, 1985	Japan			Abstract
	77	JP11086332	Mar. 30, 1999	Japan			Abstract
/LGL/	78	JP63-243804	Oct. 11, 1988	Japan			Abstract
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
/LGL/	79	"Phase-Sensitive Overlay Analysis Spectrometry", IBM TDB, March 1990.					
/LGL/	80	"Interferometric Method of Checking the Overlay Accuracy in Photolithographic Exposure Processes", IBM TDB, March 1990.					
/LGL/	81	"Interferometric Measurement System for Overlay Measurement in Lithographic Processes", IBM TDB, Feb. 1994.					
/LGL/	82	"Mask Overlay Determination", IBM TDB, Dec. 1978.					
/LGL/	83	"Width and Overlay Narrow Kerf Test Site", IBM TDB, April 1978.					

U.S. Department of Commerce, Patent and Trademark		Atty. Docket No.	Application No.
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		October 30, 2003	1765
OTHER ART – con. (Including Author, Title, Date, Pertinent Pages, Etc.)			
/LGL/	84	"Automatic In-Situ Focus Monitor Using Line Shortening Effect", Journal: Proceedings of the SPIE, vol. 3677, pt. 1-2. p. 184-93 (Abstract)	
	85	"Characterization and Monitoring of Variable NA and Variable Coherence Capable Photo Steppers Utilizing the Phase Shift Focus Monitor Reticule", Journal: Proceedings of the SPIE, vol. 2439, p. 61-9. (Abstract)	
	86	"Modeling of Optical Scatterometry with Finite-Number-of-Periods Grating", Journal: Proceedings of the SPIE, vol. 3743, p. 41-8. (Abstract)	
	87	"Grazing Incidence Diffraction By Laterally Patterned Semiconductor Nanostructures", Journal: Journal of Physics, vol. 32 no. 6, p. 726-40. (Abstract)	
	88	"A Mask-to-Wafer* Alignment and Gap Setting Method for E-Ray Lithography Using Gratings", Journal: Journal of Vacuum Science & Technology B. vol. 9, no. 6. p. 3202-6. (Abstract)	
	89	"Diffraction and Interference Optics for Monitoring Fine Dimensions in Device Manufacture", Solid State Devices, 1983. (Abstract)	
	90	"Performance of New Overlay Measurement Mark", Sung-Man Bae and Ki-Ho Baik, SPIE, vol. 2725 p. 424-435.	
	91	"Automatic Classification of Spatial Signatures on Semiconductor Wafermaps", Tobin et al., SPIE, vol. 3050, p. 434-444.	
	92	"Kinetics of the Diffraction Efficiency of Light-Induced Dynamic Gratings in Layers of Disordered Semiconductors", Arkhipov et al., Quantum Electron, vol. 23, November 1993, p. 986-988.	
	93	"Optimal Sampling Strategies for sub-100 nm Overlay", Rangarajan et al., SPIE, vol. 3332, p. 348-359.	
	94	"Super Sparse Overlay Sampling Plans: An Evaluation of Methods and Algorithms for Optimizing Overlay Quality Control and Metrology Tool Throughput", Pellegrini et al., SPIE, vol. 3677, p. 72-82, March 1999.	
	95	"Comparison of Optical, SEM and SFM Overlay Measurement", Jaiprakash and Gould SPIE. Vol. 3677, p. 229-238, March 1999.	
	96	"Formation of Periodic Diffraction Structures at Semiconductor Surfaces for Studying the Dynamics of Photoinduced Phase Transitions", Fattakhov et al., Optics and Spectroscopy, vol. 89, p. 136-142 (2000)	
	97	Photoreactive Optical Properties of Volume Phase Gratings Induced in Sillenite Crystals, When The Grating Vector Lies on the (111) Plane", Papzoglou et al., Applied Physics B 71, p. 841-848 (2000)	
/LGL/	98	"Minimization of Total Overlay Errors on Product Wafers Using an Advanced Optimization Scheme", Levinson et al., SPIE, p. 362-73. (Abstract)	

U.S. Department of Commerce, Patent and Trademark		Atty. Docket No.	Application No.
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		October 30, 2003	1765
OTHER ART – con. (Including Author, Title, Date, Pertinent Pages, Etc.)			
/LGL/	99	"A New Technique for Multiple Overlay Check", Auzino et al., Microelectronic Engineering, p. 41-42. (Abstract)	
/LGL/	100	"Alignment Mark Optimization to Reduce Tool and Wafer-Induced Shift for XTRA-1000", Ina et al., Japanese Journal of Applied Physics, vol. 38, no. 12B, p. 7065-70. (Abstract)	
/LGL/	101	"Towards the Optimal Design of Binary Optical Elements with Different Phase Levels Using a Method of Phase Mismatch Correction", Kodate et al., Trends in Optics and Photonics, vol. 41, p. 174-6. (Abstract)	
Examiner /Layla G. Lauchman/		Date Considered 01/11/2008	
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U.S. Patent Documents							
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
/LGL/	1	6,699,624	Mar. 2, 2004	Niu et al.			
/LGL/	2	6,699,627	Mar. 2, 2004	Smith et al.			
/LGL/	3	6,699,630	Mar. 2, 2004	Ota			

U.S. Published Patent Application Documents							
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate

Foreign Patent Documents								
							Translation	
		Document	Date	Country	Class	Subclass	Yes	No

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)		

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				October 30, 2003		2877		
U.S. Patent Documents								
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
/LGL/	1	5,963,329	Oct. 5, 1999	Conrad et al.				
	2	6,429,943	Aug. 6, 2002	Opsal et al.				
/LGL/	3	6,856,408	Feb. 15, 2005	Raymond				
U.S. Published Patent Application Documents								
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
Foreign Patent Documents								
							Translation	
		Document	Date	Country	Class	Subclass	Yes	No
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(Form PTO-1449)		Ibrahim ABDULHALIM et al.	1463
Filing Date		Art Group	
October 30, 2003		2877	

U.S. Patent Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
/LGL/	1	4,124,458	11-1978	Moeglich			
	2	4,200,395	04-1980	Smith et al.			
	3	4,332,473	06-1982	Ono			
	4	4,703,434	10-1987	Brunner			
	5	4,757,207	07-1988	Chappelow et al.			
	6	5,216,257	06-1993	Brueck et al.			
	7	5,479,270	12-1995	Taylor			
	8	5,607,818	03-1997	Akram et al.			
	9	5,712,707	01-1998	Ausschnitt et al.			
	10	5,738,961	04-1998	Chen			
	11	5,757,507	05-1998	Ausschnitt et al.			
	12	5,783,342	07-1998	Yamashita et al.			
	13	5,808,742	09-1998	Everett et al.			
	14	5,872,042	02-1999	Hsu et al.			
	15	5,877,861	03-1999	Ausschnitt et al.			
	16	5,902,703	05-1999	Leroux et al.			
	17	5,939,226	08-1999	Tomimatu			
	18	6,023,338	02-2000	Bareket			
	19	6,130,750	10-2000	Ausschnitt et al.			
	20	6,178,257 B1	01-2001	Alumot et al.			
	21	6,561,661 B1	05-2003	Egawa			
	22	6,594,024 B1	07-2003	Singh et al.			
	23	6,606,152 B2	08-2003	Littau et al.			
	24	6,654,131 B2	11-2003	Opsal et al.			
	25	6,665,070 B1	12-2003	Yaruski et al.			
/LGL/	26	6,710,876 B1	03-2004	Nikoonahad et al.			

Examiner

Date Considered

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				October 30, 2003	2877		
U.S. Patent Documents							
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
/LGL/	27	6,721,052 B2	04-2004	Zhao et al.			
	28	6,772,084 B2	08-2004	Bischoff et al.			
	29	6,804,005 B2	10-2004	Bischoff et al.			
	30	6,819,426 B2	11-2004	Sezginer et al.			
	31	6,822,740 B2	11-2004	Nomura			
/LGL/	32	6,855,464 B2	02-2005	Niu et al.			
Examiner			Date Considered				
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U.S. Published Patent Application Documents								
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/LGL/	33	2002/0018217 A1	02-2002	Weber-Grabau et al.				
/LGL/	34	2002/0192577 A1	12-2002	Fay et al.				
Foreign Patent Documents								
							Translation	
		Document	Date	Country	Class	Subclass	Yes	No
/LGL/	35	WO 01/073824	10-2001	WIPO				
	36	WO 01/097279	12-2001	WIPO				
	37	WO 02/015238	02-2002	WIPO				
	38	WO 02/025708	03-2002	WIPO				
	39	WO 02/025723	03-2002	WIPO				
	40	WO 02/035300	05-2002	WIPO				
	41	WO 02/065545	08-2002	WIPO				
	42	WO 02/069390	09-2002	WIPO				
/LGL/	43	WO 02/084213	10-2002	WIPO				
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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)			
/LGL/	44	Notification of Transmittal of the International Search Report or the Declaration, in corresponding PCT/US02/11026, dated 18 September 2002, 4 pages.	
	45	Written Opinion issued by the IPÉA in corresponding PCT/US02/11026, dated 11 April 2003, 4 pages.	
	46	"Light Diffraction Based Overlay Measurement", Bischoff et al., Proceedings SPIE, Vol. 4344-28 (2001), 12 pages.	
	47	Lithography Process Control, Tutorial Texts in Optical Engineering, Levinson, SPIE Press Vol. TT28, Chapter 5, "Overlay" (1999), 36 pages.	
	48	"Rigorous Coupled Wave Analysis of Planar-Grating Diffraction", Moharam et al., Vol. 71, No. 7, July 1981, J. Opt. Soc. Am., pp. 811-818.	
	49	"Exact Eigenfunctions for Square-Wave Gratings: Application to Diffraction and Surface-Plasmon Calculations", Physical Review B, Vol. 26, No. 6, 15 Sep 1982, pp. 2907-2916.	
	50	"A Modal Analysis of Lamellar Diffraction Gratings in Conical Mountings", Li, Journal of Modern Optics, 1993, Vol. 40, No. 4, pp. 553-573.	
/LGL/	51	"In-Process Image Detecting Technique for Determination of Overlay, and Image Quality for ASM-L Wafer Stepper", Pforr et al., SPIE Vol. 1674, Optical / Laser Microlithography V (1992), pp. 594-608.	
Examiner /Layla G. Lauchman/		Date Considered 01/11/2008	
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